



AB003. System development of telesimulation for neonatal resuscitation and NICU telemedicine

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Abstract: Since about half of deliveries are carried out in local obstetric clinics in Japan, instructors are expected to improve resuscitation skills of workers engaged in delivery in the community. In this study, we developed a simulation tool for the remote support of neonatal resuscitation applicable for telemedicine. We developed seven simulation-based education tools: (I) stethoscope with a built-in speaker, (II) simulated pulse oximeter (iOS application operated using an iPad), (III) iPhone iOS application for wireless operation of (I) and (II), (IV) compact camera for video recording of resuscitation training, and (V) iPad for

debriefing of training. In addition, (VI) a bag valve mask-equipped atmospheric pressure sensor and (VII) chest-compression monitoring-sensor were developed for remote evaluation of the reliability of resuscitation techniques of trainees. All these tools were wireless-linked through Wi-Fi and Bluetooth to prepare a remote support system. We used this system in neonatal resuscitation training in Kingdom of Bhutan. We operated this system from Japan and could be carried out without equipment failure. There was no two-way communication time-lag and facilitation by an instructor from a remote location was mostly the same as in a normal session. The instructor could easily evaluate the skills of the trainees through a streaming video and monitoring index. It was suggested that the system contributes to cooperation between a tertiary medical facility and local delivery facilities. Since the real cost was low, about 300 US dollars excluding the cost of the mobile device, its introduction may serve as an important social foundation for regional cooperation in not only Japan but also developing countries worldwide. If (VI)-(VII) of the system described above and communication environment can be prepared, remote support of neonatal resuscitation in a clinical practice may be possible.

Keywords: Telemedicine; education; neonate; resuscitation; ICT

doi: 10.21037/pm.2020.AB003

Cite this abstract as: Iwanaga K, Araki R, Hanaoka S, Tomotaki S, Ooi S, Matsumura K, Noma H. System development of telesimulation for neonatal resuscitation and NICU telemedicine. *Pediatr Med* 2020;3:AB003.